



Goddard Procedural Requirements (GPR)

DIRECTIVE NO. GPR 8730.6A

APPROVED BY Signature: Original signed by
Arthur Obenschain for

EFFECTIVE DATE: June 7, 2010

NAME: Robert Strain

EXPIRATION DATE: June 7, 2015

TITLE: Director

COMPLIANCE IS MANDATORY

Responsible Office: 300/ Safety and Mission Assurance Directorate

Title: **Electrostatic Discharge (ESD) Control**

PREFACE

P.1 PURPOSE

This document establishes GSFC-WM-001, *Workmanship Manual for Electrostatic Discharge Control (Excluding Electrically Initiated Explosive Devices)*, as the local GSFC Electrostatic Discharge (ESD) control program implementation plan in accordance with, and traceable to ANSI/ESD S20.20, *Standard for the Development of an Electrostatic Discharge Control Program for – Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)*, and which complies with the requirements of NPD 8730.5. Organizational responsibilities relative to the requirements of GSFC-WM-001 are also defined.

P.2 APPLICABILITY

This GPR shall apply to all organizations within the Goddard Space Flight Center (GSFC) where ESD sensitive electronic components for flight applications, including engineering and test models, and Ground Support Systems, are tested, assembled, inspected, stored, or otherwise processed in a laboratory environment. For all other applications where ESD Sensitive (ESDS) parts are handled, including field operations, these requirements are recommended, as applicable and practical.

Special requirements may exist that are not covered by, or are not in conformance with, the requirements of this GPR. Engineering documentation shall contain the details for these requirements, and shall take precedence over conflicting portions of this document.

P.3 AUTHORITY

NPD 8730.5, NASA Quality Assurance Program Policy

P.4 APPLICABLE DOCUMENTS

ANSI/ESD S20.20, Standard for the development of an ESD Control Program for the Protection of Electrical and Electronic Parts, Assemblies, and Equipment (Excluding Electrically Initiated Explosive Devices).

CHECK THE GSFC DIRECTIVES MANAGEMENT SYSTEM AT
<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

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NASA-STD-8739.7 (Cancelled), Electrostatic Discharge Control (Excluding Electrically Initiated Explosive Device).

GPR1410.2 Configuration Management

NPR1441.1 NASA Record Retention Schedules

GPR 1700.7 Electrical Safety

GSFC-WM-001, Workmanship Manual for Electrostatic Discharge Control (Excluding Electrically Initiated Explosive Devices) [GSFC-WM-001 can be downloaded from <https://ossmacm.gsfc.nasa.gov/index.cfm>, no login is necessary, click on “Documentation” on the top menu bar, then click on the submit button at the bottom of the page, click on the document name, click on the version number, this will show the PDF file that can be downloaded.]

P.5 CANCELLATION

GPR 8730.6 Electrostatic Discharge (ESD) Control

P.6 SAFETY

Properly maintained and calibrated equipment is essential for the effective and safe processing of flight hardware and ground support systems and the safe and effective performance of our flight projects. The safety of all hardware processed and handled in Electrostatic Discharge (ESD) controlled areas is also dependent on the proper grounding of the facility and of the common ground points (see GSFC-WM-001), the proper maintenance and operation of all safety equipment such as Ground Fault Circuit Interrupters (GFCIs), and compliance with the resistance requirements of GSFC-WM-001 for all dissipative surfaces. The methods prescribed by GSFC-WM-001 are designed for the protection of hardware from damaging electrostatic discharges and are not intended to guarantee the safety of the operators from all possible electrical hazards. Therefore, additional human safety precautions may be required and shall be in accordance with GPR 1700.7, Electrical Safety.

P.7 TRAINING

1. GSFC-WM-001 describes the training requirements associated with operator, lab monitor and instructor certification. GSFC-WM-001 GSFC Workmanship Manual for ESD Control training is available from NASA Manufacturing Technology Transfer Center (NMTTC); use the appropriate “Workmanship Training” link at <http://nepp.nasa.gov/index.cfm/14662> (Click on “GSFC School” link). Personnel at the Wallops Flight Facility (WFF) should contact Code 803 to obtain training locally.

2. Personnel working in GSFC designated ESD controlled areas shall have a current ESD certification to GSFC-WM-001. The type of training class shall correspond with their job duties (operator, lab monitor,

and instructor). Supervisors are responsible for certifying personnel within their organization. Personnel certification is based on current training and continued competency.

Note: Training Certification to GSFC-WM-001 satisfies legacy contractual requirements for certification to NASA-STD-8739.7 (Cancelled) for on-site operations.

P.8 RECORDS

Records required by the processes described herein shall be retained in accordance with GPR 1441.1. Records shall be as follows:

Record Title	Record Custodian	Retention
Training records	Civil Servants: Office of Human Resources and/or Supervisor, as described in GPR 3410.2 On-site Contractors: Company retains records.	NRRS 3/33G2* -- Destroy 5 years after employee discontinues or completes training.
ESD workstation records	Laboratory Manager or owning project manager when there is no lab manager	NRRS 8/107* -Temporary- Destroy/delete between 5 & 30 years after program/project termination.
Temporary/Intermittent Workstation records	Project Manager	NRRS 8/109*- Temporary- Destroy/delete when between 2 & 15 years old. Do not retain longer than life of program/project plus 5 years.
Monthly Bench Certification Summary	Code 300 ESD Program Lead	NRRS 5/35A.1- Destroy 3 years after completion of final production order for the related component.

*NRRS – NASA Records Retention Schedules ([NPR 1441.1](#))

P.9 MEASUREMENT/VERIFICATION

The manager of the ESD Control Program in Code 300 shall collect results of the bench certifications and shall provide summary data to the SMA Director monthly. As a minimum the following data shall be included:

- number of benches audited,
- number of benches certified,
- number of benches failing certification,
- number of benches that were determined to be non-applicable,
- the number of benches pre-certified,
- the number of benches receiving a follow-up certification.

PROCEDURES

In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

1. GSFC-WM-001 shall be the local GSFC ESD Control implementation plan traceable to ANSI/ESD S20.20 which is required by NPR 8730.5 for all Programs and Projects.
2. The Safety and Mission Assurance Directorate shall maintain GSFC-WM-001 in accordance with the requirements of GPR 1410.2 Configuration Management and the CM requirements given in GSFC-WM-001.
3. All flight projects shall require compliance with GSFC-WM-001 for
 - i. all applicable personnel working in GSFC-owned and operated facilities
 - ii. all applicable hardware processed in GSFC-owned and operated facilities
 - iii. all applicable operations performed in GSFC-owned and operated facilities

All Directorates shall impose GSFC-WM-001 on services contracts whose statements of work includes processing of applicable ESDS equipment in GSFC facilities. (Reference paragraph P.2 above, and GSFC-WM-001, for definitions of applicability).

Flight projects shall require all suppliers who are external to NASA GSFC, and who process applicable hardware in facilities not owned or operated by GSFC, to meet the requirements of ANSI/ESD S20.20. GSFC-WM-001 is not for use outside of GSFC-owned and operated facilities.

Visitors, who do not carry ESD operator certification traceable to GSFC-WM-001, may perform operations on ESD-sensitive hardware in GSFC facilities (See GSFC-WM-001 for escort requirements). However, those operations, unless considered field operations, shall be performed in an ESD-safe certified area that meets the requirements of GSFC-WM-001. Principal Investigators, handling their own equipment at WFF may decide the level of ESD protection needed for their equipment and act accordingly.

4. Personnel and bench certifications shall be in accordance with the requirements of GSFC-WM-001. Code 300 is the responsible process owner for the bench certification process. Implementation of the bench certification process at Greenbelt campus is performed by Code 300 and at WFF by Code 803. (See <http://sma.gsfc.nasa.gov/ESDResources/index.php> for contact information to arrange for bench certification and to obtain training information).
5. For the Greenbelt campus only, Code 549 is the responsible process owner for ESD garment approval, acquisition, and laundering. ESD garments shall not be used which have not been approved by Code 549. For the WFF no additional requirements apply for garment management other than those already defined in GSFC-WM-001.
6. Laboratory managers and personnel working in ESD-controlled areas shall comply with GSFC-WM-001 requirements related to access to ESD-controlled spaces by personnel without proper certification (e.g. visitors).

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Appendix A – Definitions

See GSFC-WM-001 Workmanship Manual for definitions related to Electrostatic Discharge Control.

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Appendix B – Acronyms

ANSI	American National Standards Institution
ESD	Electrostatic Discharge
ESDS	Electrostatic Discharge Sensitive
GSFC	Goddard Space Flight Center
GFCI	Ground Fault Circuit Interrupter
GPR	Goddard Procedural Requirement
NMTTC	NASA Manufacturing Technology Transfer Center
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
SMA	Safety and Mission Assurance
WFF	Wallops Flight Facility
WM	Workmanship Manual

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	01/05/2006	Initial Release
A	06/07/2010	Added requirements to: <ol style="list-style-type: none">1. Establish the parent requirements for ANSI/ESD S20.20, this GPR and GSFC-WM-0012. Establish GSFC-WM-001 as the ANSI/ESD S20.20 implementation plan for NASA GSFC.3. Require compliance with GSFC-WM-001 by all projects (flight and developmental) processing hardware in GSFC facilities4. Clarify that GSFC-WM-001 applies internally to GSFC only.5. Clarify applicability of GSFC-WM-001 for visiting principle investigators (PIs) and for field operations.6. Added, https://ossmacm.gsfc.nasa.gov/index.cfm,7. Provide a point of contact for workspace certification and garment services.